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NOTES ON THE SEAL AND WHALE FISHERY OF 1888.

By T. SOUTHWELL, F.Z.S.

IF perseverance could command success surely the Greenland and Davis Straits whalers would be richly rewarded, yet year after year they renew their costly outfit, and venture amongst the thick-ribbed ice, braving the fogs, storms, and countless discomforts of the Arctic Seas only to return disappointed men! Surely there must be some peculiar fascination which attracts them year after year to the inclement north to so little profit; for eight seasons I have chronicled the declining results of their efforts, and am at a loss which most to admire, their indomitable perseverance, and the tenacity with which they cling to their vanishing industry, or the manly courage with which they bear their reverses. Whaling, like mining, is a "venture" which may prove a great success or the reverse, and there is all that element of uncertainty attending such a voyage which to adventurous men possesses so great a charm. Who can tell but to-morrow their toil may be sweetened by success, and the vessel bear up for home a "full ship," or any season the state of the ice may be found to have changed, and the long series of bad years give place to a series as remarkable for their successes?

The report from the Newfoundland Sealing for 1888 shows an improvement upon that of the previous season, the total number captured by the British vessels being 210,810 against 177,733, and no casualties have occurred, The fleet consisted of the same vessels as took part in the season of 1887, with the exception

TISH MUSEUM

of the 'Arctic,' which was lost at the Whale fishery in Davis Straits, and has not been replaced. Nineteen vessels were present, three of which are reported "clean," and the average of the remaining sixteen was 13,176 per vessel; but as usual the take was very unequally distributed, although not so much so as in 1887, for seven vessels made cargoes of over 15,000 (against four only in the previous year), *viz.* the 'Neptune,' 42,242; the 'Eagle,' 26,000; the 'Aurora,' 25,000; the 'Ranger,' 24,151; the 'Esquimaux,' 22,824; the 'Iceland,' 16,000; and the 'Falcon,' 15,811; an average of 24,575, whilst the remaining nine vessels averaged only 4309. No second trip was made this season. The value of the Newfoundland oil was about £19 15s. per ton, and the skins produced from 10s. to 18s. each. Four Dundee vessels were at the Newfoundland sealing, *viz.* the 'Aurora,' which took about 25,000; the 'Esquimaux,' 22,824; the 'Terra Nova,' 11,895; and the 'Polynia,' 7135; all of which are included in the above total.

The young Greenland sealing was much more successful than in 1887; there were some twenty-three Norwegian and three Scotch vessels present; the former took 38,200, and the latter 1700, or a total of about 39,900 young Saddle Seals. In addition to the 1700 young seals it appears that the Scotch vessels subsequently shot some 9388 others, almost all Bladder-nose; and the 'Alert' returned from Cumberland Gulf with 3300, which brought the Greenland total up to 14,388.

At the Newfoundland and Greenland old and young sealing together, eleven Scotch vessels captured 82,235 seals (against 57,240 in the previous season), showing a considerable increase in both fisheries, but a total vastly smaller than was annually secured in days gone by. These at an average of, say, 10s. per skin, would produce £41,117, to which must be added 997 tons of oil at £20 per ton, £19,940, or a total of £61,057, against a similar estimate of £30,852 for 1887—a much more satisfactory return, so far as this branch of the industry is concerned, the result being helped as well by the increased capture of seals as by the slightly better prices of produce. Included in the seal-oil is the yield of 311 Walrus brought home by the Davis Straits vessels.

The total number of vessels which left Dundee last season for the Seal and Whale fishery was ten, the same as in 1887, the

'Earl of Mar and Kellie,' which was not out last year, taking the place of the 'Arctic,' which, as already stated, was lost in Davis Straits. The list of Peterhead vessels is increased to six, against four the previous season, for although the 'Erick' has entered the Hudson's Bay service, the 'Windward,' which had not been out since 1884, was put in her place for the sealing, and the return of the 'Alert' from Cumberland Gulf, where she had wintered, as also an irregular voyage, apparently undertaken for sporting purposes by the 'Traveller,' gave an apparent increase of numbers, which, however, was not real.

Any slight advantage which was gained in the sealing was more than lost in the Whale Fishery; this was particularly the case at Davis Straits, the eight whales taken there being very small, and yielding only 43 cwt. of bone; the Right-Whale oil is not given separately, the returns under that head including the White-Whale oil also; but at the usual average of one ton of oil to every cwt. of bone, it will be seen that this branch of the fishery was far from remunerative. As in the past two seasons the ice has never cleared out of the Straits, its position remaining practically unaltered; and until this clearance takes place, I am informed, it is the opinion of practical men that there will be no fishing in Davis Straits, the whales having sufficient shelter to prevent the vessels getting within reach of them. I am told the spring fishing for this reason, although many whales were reported by the natives, was a complete failure, and that in the fall no whales were seen, that the eight whales secured were all caught in Lancaster Sound in July, and that even from this once-favoured locality the fish have either been killed off or have gone elsewhere, thirteen being the total number seen there during the past season. The 'Active' returned clean.

The reports from Greenland are not less unfavourable, not so much owing to the scarcity of whales as from continued bad weather, and the extremely unfavourable condition of the ice; only four whales were brought home from Greenland, which although very small, yielding only 44 cwt. of bone and 52 tons of oil, must have been greatly superior to those from Davis Straits; two of these fell to Capt. D. Gray of the 'Eclipse,' and two to his brother, Capt. J. Gray of the 'Hope.' The 'Perseverance' from Cumberland Gulf came back clean. I shall refer to the voyage of this vessel farther on.

The total quantity of whaling produce brought home by the Dundee and Peterhead vessels was 286 tons of whale-oil, the bulk of which would be the produce of 902 White Whales, 28 tons of Bottle-nose oil, and 4 tons 7 cwt. of bone. The oil, at £20 per ton for Whale-oil and £26 for Bottle-nose, represents £6448, and the bone, at £1600 per ton (allowing for under-size), about £6360 more; together, £12,808, against a like estimate for 1887 of £17,060, notwithstanding the increased price of bone. This is by far the smallest amount I have yet had to record. To show the serious falling off in this branch of the industry, I may mention that the estimates made on the same basis in my last five years' Notes have been as follows:—£88,570 in 1884; £31,800 in 1885; £29,890 in 1886; £17,060 in 1887; and in the past season £12,880 only.

In addition to the Whales and Seals above recorded, 311 Walruses and many Bears were obtained.

Of the incidents of Capt. Gray's voyage in the 'Eclipse' there is no need to speak, as Mr. Robert Gray, his son (and chief officer), has already communicated extracts from his "Log" to 'The Zoologist' (pp. 1, 41, 81 *ante*).

I have mentioned the 'Perseverance,' which returned clean to Peterhead after a fourteen-months' voyage to Cumberland Gulf. I have been favoured with some particulars of her voyage, which I will briefly condense, as they will indicate the character of the autumn and spring fishery, to engage in which the vessels winter in Cumberland Gulf. The 'Perseverance,' a barque of 163 tons, left Peterhead on July 20th, 1887, and after a very stormy passage arrived at Cumberland Gulf on Sept. 14th, where she discharged stores at Blacklead Island, the American station. Thence she was towed by the 'Active' s.s. (of Dundee) to Kickerton, to discharge more stores for Mr. Noble's station, returning to Blacklead Island, and proceeding to Niantilick (Winter Harbour), to take up position for the fall fishing. After about four weeks the ice began to make, and she attempted to get down to Harrison's Point; but a southerly gale broke up the ice, and drove her and the 'Germania,' another sailing vessel belonging to Peterhead, outside the islands altogether, and they wintered off Bouilli Island in company. In the spring the Gulf was so filled with ice that they could not get their boats into the water, and the fishing was a failure; an attempt for White Whales was equally unsuccessful, the fish breaking back and all escaping. Finally the 'Perseverance' left for home on August 28th, 1888, the 'Germania' staying for the fall fishing. Only one Right Whale is said to have been seen, and the other vessels and stations in the Gulf are reported to have had no better fortune than the 'Perseverance.'

One of the most successful whalers is Capt. Adams, formerly of the 'Arctic,' but now commanding the 'Maud,' and in the past season his good fortune (skill?) has not failed him. Capt. Adams arrived from Davis Straits with a full ship, his cargo consisting of three small Right Whales, 300 White Whales, 1000 Seals, and 175 Walrus, yielding 115 tons of whale and seal oil and 13 cwt. of bone; he also obtained several Bears, one of which he brought home alive. The following is a brief account of Capt. Adams's voyage to Davis Straits, extracted from one of the Dundee papers, which I hope you will allow me to quote, as it not only shows the state of the ice in Davis Straits, but also gives a fair idea of the course followed by the Straits fishers.

Capt. Adams states that the S.W. fishery proved barren on account of the stormy weather. Three times the vessel was driven down near to the Labrador coast, 180 miles distant, and each time three days were occupied in regaining the fishing-ground. A number of Seals were secured, but only one Whale was seen, and the crew failed to capture it. As there were no prospects of success at the S.W., the whale-fishing on the E. side of Davis Straits was attempted, but the impenetrable fields of ice barred the way, and nothing could be done. The voyage northward was therefore continued to Disco, where a number of Walrus, Seals, and Bears were shot. In communication with the natives, Capt. Adams learned that many large Whales had been seen off Disco early in the year, but that the natives had been unable to capture any of them. Melville Bay was comparatively clear of ice, so that no difficulty was experienced in crossing it. Continuing northward, Cary Islands were passed, and Capt. Adams made an attempt to reach what is known as the Middle Ice fishing-ground. But here no open water was to be seen, the whole of Baffin's Bay being completely blocked with ice. The only course was to get up Lancaster Sound, and this was effected after great difficulty, a way having to be cut for a considerable distance through the ice-barrier at the entrance to the Sound. Lancaster Sound was exceptionally full of ice, but a passage was made to Prince Regent Inlet, a favourite resort of the Black and also of the White Whale. Here the crew succeeded in capturing three Black Whales, one of medium size, with 9 ft. 3 in. in bone, one small fish, the third being a sucker. After the disappearance of the Black Whales the 'Maud' proceeded down the Inlet to Elwin Bay, where a shoal of White Whales was surrounded by the boats and the fish driven into a sheltered creek. Here on the tide receding the men entered the water and speared the fish, 300 of which were captured. The scene at the capture was most exciting, the men being waist-deep in the water, while the fish were raising the mud by the violent lashing of their tails in their struggles to escape. After these Whales—all large males—had been got on board it was found that the 'Maud's' tanks were full, and she returned through Lancaster Sound and down the W. side of Davis Straits, along which so much ice was packed that there was no chance of prosecuting the fishing, even although Whales had been seen. The 'Maud' accordingly bore up for home.

I have again to thank Messrs. W. Grieve & Co., of Greenock, for the statistics of the Newfoundland Sealing; Mr. David Bruce and Mr. Kinnes, of Dundee, and Capt. David Gray and his son Mr. Robert Gray, of Peterhead, have also, as usual, very kindly rendered me great assistance.

FIELD NOTES IN WESTERN SWEDEN.

By F. P. Johnson.

The following notes were made in the summer of 1888, when I paid a short visit to a relative who happened to be renting the fishing and shooting of Lake Änn, in Western Sweden. This lake is fed by three tributaries, all of which rise upon the watershed dividing Norway from Sweden. Their united waters pass through a chain of lakes, of varying extent, and flowing eastward as the River Ljungan, enter the Gulf of Bothnia near Sundsvall. Lake Änn extends about ten miles in length, and probably measures seven miles in span, including several large islands within its area. Its depth is for the most part insignificant, but the southern extremity is very deep. The finest of its tributaries is the Handel, which rises on Sylfjellen (6552 ft.), and a short distance above the lake falls over a fine fosse, thence forcing its way through numerous small channels, intersected by islets overgrown with mountain-ash and willow.

When I arrived, on June 11th, the deeper end of the lake was thickly coated with ice, and snow lay in drifts down to the water's edge. The season was unusually late, and a rapid thaw caused the lake to rise considerably above its usual level. Lake Änn is situated in the heart of a forest region. Upon its eastern border the forest is continuous, only broken by the occasional presence of small clearings; on the western side it extends from the margin of the lake (2000 ft.), until the tall spruce-firs give place to a broad belt of dwarf willows. Across the lake, from our quarters, snow-capped ridges of hills extend in one unbroken line along the horizon.

That birds were extremely scarce was my first impression of this wild region, and although, as spring advanced, fresh species appeared, we never found many birds except in the neighbourhood of the lake.

The Fieldfare was first noticed on June 12th; on the 24th I took a clutch of fresh eggs, between which date and July 5th we examined many nests of this Thrush, some incomplete and empty, others containing incubated eggs. A few Ring Ouzels nested on the nearest fells. Redstarts found attractive stumps of old timber near the water, and I lifted a hen Redstart off her incubated eggs on June 28th. I was anxious to find the Dipper, *Cinclus melanogaster;* but our boatman, who knew it well, said that the resident birds had been killed, he thought, by the severity of the preceding winter.

Numerous Willow Warblers haunted the forest as well as bushes near the water, while an occasional Marsh Tit flitted through the woods. Every farmstead was frequented by a pair of White Wagtails, but the Grey-headed Wagtail, *Motacilla cinereocapilla*, was seen only on the islands of the lake. The Tree Pipit was the only species of *Anthus* observed; one obtained at Lake Änn proved to be smaller than an average English specimen. House Martins built their mud-nests under the eaves of our farmhouse, but we only observed the Swallow coursing over the country.

The weather during my stay was brilliantly fine, and the

Bramblings, *Fringilla montifringilla*, sang out jubilantly from their favourite fir-tops. A nest of this finch, taken on June 28th from a spruce-fir, contained seven eggs. The materials included fresh moss and fine stems of grass, trimmed with grey lichens, and quilted inside with feathers (among which we recognised with pleasure some feathers of the Nutcracker, the only intimation we had of its presence in the neighbourhood). Another common bird was the Reed Bunting. Magpies nested near our quarters, and visited us daily for scraps, an office in which the Hooded Crows, being early abroad, frequently forestalled them. The Cuckoo and Swift were likewise present. Once I picked up some feathers of a Snowy Owl, but we never saw or heard any Owls, nor did the Kite or Rough-legged Buzzard ever cross our path. The Merlin was fairly common, and I was interested to find one sitting on her eggs in a spruce-fir, about thirty feet from the ground. I shot her off the nest for identification. Her eggs were fresh, and the nest appeared to be that of a Hooded Crow.

Desiring to obtain eggs of the Osprey, I visited two eyries that were tenanted and several old ones; but no eggs were to be had, though I gave up much time and trouble in an attempt to secure them. One of the nests I photographed. In both of those in repair the old Ospreys had chosen to build on spruce-firs, the tops of which had been broken off previously, thus forming a natural platform for the compact pile of strong and interlaced sticks of which the nest was composed. In this part of the country, fish being difficult to obtain in abundance until the end of July, the Ospreys breed late, in order to cater the better for their young; our boatman had once taken young Ospreys out of an eyrie in August.

The *Tetraonidæ* of the district are Hazel Grouse, Capercaillie, Black-game, and Willow Grouse, regarding the first of which we learnt nothing new. Capercaillie nested freely in the district, and I often saw their droppings. Black-game preferred the islands, on one of which I disturbed a grey hen sitting on six eggs. For Willow Grouse the likeliest ground was upon the verge of the forest. The only eggs of the Willow Grouse that I obtained agree pretty closely in colour with a common reddish variety of *Lagopus scoticus*, but are decidedly smaller and in shape less spherical.

Fishing occupied so much of our time, as to afford considerable facility for observations on such wildfowl as tenanted the lake. I never identified the Mallard, Teal, or Pintail; nor did I find a Wigeon's nest, though a hen Wigeon, when shot, showed by her bared breast, that she had already commenced the duties of incubation. A pair of Scaups, *Fuligula marila*, might be seen daily feeding at the mouth of the Handel, but when shot, on July 2nd, their plumage showed no signs of breeding. The drake wore the usual nuptial dress; his mate was an interesting bird, exhibiting very little freckling on the back, and having the white under parts closely mottled with brown feathers, producing a marbled appearance.

Goldeneyes came flying up the river to fish every evening, and I often saw them at other times, but never came across a nest. When I first arrived, Common Scoters, *Œdemia nigra*, were numerous on the lake, swimming in flocks of from fifteen to twenty birds. I found a full nest of the Common Scoter within a few feet of the water; it was placed under cover of a drooping fir-branch, and resembled that of the Mallard. I also found some sucked eggs of this species. The Velvet Scoters, *Œ. fusca*, had already paired when I first saw them on June 11th, but it was not until the 18th that I found a nest of this duck on a small island overgrown with bilberry. The nest, composed of down and dry leaves, was placed at the foot of a stump of mountain-ash—rather an exposed situation, but the eggs were slightly covered up. I shot a female Velvet Scoter off another nest a few days later; this was placed under a low branch of birch, and contained eight eggs. Two drakes which I shot on the lake at the same time were in full nuptial dress, and showed no signs of eclipse. They are strong birds, very tenacious of life, and hard to kill. Red-breasted Mergansers, *Mergus serrator*, were common, and nested freely on the islands, concealing their nests beneath long, trailing branches of firs close to the water. I shot a couple of drakes in full eclipse in the middle of June.

The prevalence of marshes near Lake Änn raised premature hopes that we should meet with some of the rarer waders, and had time enabled us to explore the morasses carefully we should no doubt have been rewarded. Cranes were observed, but only as passing over us, nor did the Red-necked Phalaropes, *Phalaropus hyperboreus*, prolong their visit to the lake beyond a day or two, when we watched them floating quietly on the water.

Golden Plovers, of course, nested on the fells, and Woodcocks "flighted" through the forest-glades of their summer home, but I never identified the Jack Snipe, and indeed only once fell in with the Common Snipe. The abundance of the Common Sandpiper, *Totanus hypoleucus*, fully justified its trivial appellation, and I was entertained by a smart chase between one of these little waders and a Merlin, when the Sandpiper adroitly *dived* away from his pursuer. I was much interested in the Greenshank, *T. glottis*. Nearly every extensive bit of bog contained a pair of these birds, which on our approach raised their vehement protests, perching on hayracks, stumps of trees, and other prominent points; one anxious pair perched on the top of a tall spruce-fir. Whether they had begun to lay I do not know, though I searched long and fruitlessly for their nests. The Whimbrel, *Numenius phæopus*, preferred drier ground, and a clutch of fresh eggs of this bird was brought to me one morning from a neighbouring moss.

The great lake was singularly destitute of sea-fowl (*Laridæ*). I never observed a Gull of any kind, though once a party of Arctic Terns paid us a short visit. Nor did I see the Red-throated Diver, *Colymbus septentrionalis*, but upwards of twenty pairs of the Black-throated Diver, *C. arcticus*, frequented this extensive lake. Linnæus has recorded that the skin of this Diver was valued for its toughness, and used in the manufacture of caps ('Lachesis Lapponica,' ii. p. 98). The Swedish proprietors of the shooting we rented, including the lake, told us that they sometimes shot one for this very purpose, but added that, generally speaking, they were protected by their extreme wariness. I secured two clutches of eggs, both deposited on small islands.

In concluding these jottings, it is fair to say that they were made in the intervals of fishing only, and do not represent such results as might have been expected had our chief object been ornithology and the collection of specimens. At the same time, of course, the forest being preserved for us, we possessed advantages in freedom of action which would not fall to the lot of casual travellers.

A NESTING PLACE OF *LARUS FUSCUS.*

By J. W. Willis Bund, M.A., F.L.S.

It is usually stated that the Lesser Black-backed Gull, *Larus fuscus,* builds on rocks and cliffs near the coast. This, however, is not always the case, for it sometimes nests inland.

I was travelling third class in a train on a Welsh railway one very wet day in the autumn of 1887, when a man who was in the carriage called my attention to the flooded state of a large marsh which was skirted by the railway. He said "I am glad I am not there now, gathering Gulls' eggs." On my asking for an explanation, he told me that he went there every year to get Gull's eggs, and that they were very good to eat. He could not, however, name the particular species of Gull. The place was a large peat-moss through which a river flowed, and although, here and there, there were large channels and backwaters connected with the river, on the whole the place was dry, and by no means the sort of locality for *Larus ridibundus,* the Gull one would expect to find breeding in colonies inland.

The following May I was again in this part of Wales, and I then determined to find out something about this "Gullery." On making enquiries I received very contradictory information, several people denying that there were any Gulls there at all, and asserting that the only birds that built in the marsh were Peewits and Curlews. Part of this marsh belongs to a nobleman who preserves his game strictly, and I enquired from one of his keepers. "Yes, there were Gulls there, a large number of them; the people came to gather the eggs and eat them. I was welcome to go and see." He could not say what species of Gull built there, but he thought it was the Common Gull. So I started one day with a guide to see and judge for myself.

The marsh is the remains of what must have been at some geologically recent period a large lake, probably about six miles long by about two across; a river flowing through the long way divides it into two unequal portions, and there are various brooks flowing across it into the river. It is one huge mass of peat, of which at different spots large quantities are dug for fuel. In places the surface is fairly smooth, in others it is covered with luxuriant heath; and at one spot there are numerous hillocks, like gigantic mole-hills.

We saw numbers of Peewits and Curlews, but looked in vain for their nests, although I am sure we were close to both. We crossed a small brook, the marsh became higher and drier, and as the result saw nor heard any more of Peewit and Curlew. So far we had not seen any sign of a Gull, and I began to doubt their existence here. Going on a little further I heard a croak, and looking up saw a Gull I could not quite make out, though I was sure it was not a Black-headed Gull. About a quarter of a mile off some twenty or thirty Gulls were standing on the hillocks, and on nearing them we began to look about for nests. We soon found traces of these either on or near the hillocks, round depressions which the birds had worked out with their bodies, exactly like the nests of tame ducks. Some of these were lined with dry grass, others had nothing in them but a stray feather or two. At last I almost walked into one, in which there was a large brown egg spotted with black, about the size of a duck's egg. Proceeding a little further, I found a nest containing two eggs, one grey with black spots, the other brown; and then, in a radius of say 100 yards, I found half-a-dozen more nests, containing from one to four eggs. The Gulls were now flying all round us, and so far as I could see they were the Lesser Black-backed Gull; but to make the matter quite certain, I found a dead bird on one nest that had the distinctive characteristic of yellow legs. There was no doubt, therefore, that this was a colony of *Larus fuscus*. We soon got through the breeding place, and seeing no more nests, I went back to try and ascertain the area over which the nests were distributed. Speaking roughly, I should say that it was a space of about a quarter of a mile one way, and half a mile the other. In this area the Gulls are very numerous. I imagine there were at least 100 pairs, but the nests were far more numerous. I counted about fifty nests, of which some twenty contained eggs. On none of these were the birds sitting.

They rose, and after circling round us, settled about 200 yards off, one or two flying round croaking as long we remained. The ground was quite dry, the spot selected being the highest point of the marsh. I took one or two eggs, and found in the same nest one newly laid and one partly incubated. Clearly the birds lay in each other's nests. The eggs are of the most varied colour, from chocolate-brown with black spots, to light grey with black spots. Even in the same nest the colour of the eggs often varies greatly. The shape also differs a good deal, some of the eggs being quite elliptical, others very pointed at one end. We did not stay long at the place, as I did not want to disturb the birds more than was necessary, having seen all that was to be seen. In the middle of the Gull colony I found a nest and eggs of the Meadow Pipit, *Anthus pratensis*, and a very short distance beyond a nest and eggs of the Red Grouse, *Tetrao scoticus*.

About a quarter of a mile away I lay down to watch the Gulls return. It was some time before they did so, and they came one by one, flew all round, and alighted near the nest. I did not see any go on to the nest, but they walked about and then stood usually on a hillock close by the nest. In about an hour it was all quiet, a casual Gull flew overhead; but except that, the place was still. The white breasts of the birds standing about could be seen, but to no very great extent, and it was hard to believe that within a few hundred yards there was a large and thriving colony of Lesser Black-backed Gulls. As far as I can make out, all the year round chance Gulls may be seen about the place, but except at the breeding-time no very great number. I asked the keeper if they did any harm to game or fish. He said, "No; it is those big ones (meaning the Great Black-backed Gulls) that do the mischief; they will kill young birds, young rabbits, and even young lambs."

I have purposely abstained from mentioning the locality of this gullery, for I should greatly regret that the birds should be disturbed. The place lies in the regular tourist track, and the birds would soon be exterminated if the professional egg-hunter or collector was informed of the place. It is not so very far from an inland breeding-place of the Cormorant. It would be a pity to disturb the colony. I know of no other in a similar place.

ORNITHOLOGICAL NOTES FROM NORFOLK.

By J. H. Gurney, Jun., F.Z.S.,
President of the Norwich Naturalists' Society.

In continuation of my Notes for 1888, which have been communicated to the end of May (p. 18), I now forward those for the remainder of the year, premising that in the month of June no observation was made of sufficient interest to be reported. I purposely refrain from any remarks on the visitation of Sand Grouse, which last summer attracted so much attention, because it seems to me that, so far as Norfolk is concerned, Mr. Southwell's excellent article (Zool. 1888, pp. 442—456) leaves nothing to be desired.

I may correct, *en passant*, a slight error in my last contribution which escaped me when revising the proof, namely, the Cirl Buntings referred to on page 14 were obtained in January, not February.

In July the prevailing direction of the wind was S.W. On the 4th of that month the members of the Norwich Naturalists' Society made one of their summer excursions to the seat of Sir Reginald Beauchamp, at Langley, and in the course of their ramble were shown a Wild Duck which had selected the top of a thatched shed for the place of her nest, the colour of her plumage so closely resembling the old shed that it was difficult to distinguish her. On the 11th two full-grown young Kestrels, able to fly, taken at Stokesby, had the tails blue washed with rufous and faintly barred with black, which is singular at such an early age. Several of the changes of plumage which the Kestrel undergoes are described by Mr. Cecil Smith (Zool. 1886, p. 110) and Mr. F. C. Aplin (Zool. 1887, p. 112), but the blue tail is usually regarded as characteristic of the adult male. The sex of the two birds above referred to was not ascertained by dissection, but it is assumed that they were both males.

In August the prevailing wind continued S.W. On the 2nd a Montagu's Harrier rose out of the sedge at Ranworth. I did not fire at it, but two others afterwards rose from the same place, and, a shot being fired, one was brought down: they were young birds, the one procured not being full grown. The flight of Montagu's Harrier is very deliberate, and more or less a circular flight (with deviations), but every few seconds there is a stop, and the wings hang motionless in the air with their points above the plane of the back. On the 21st an Eared Grebe, still in summer plumage, was shot at Salthouse.

In September the prevailing wind was E. On the 10th Mr. George Power, who was so fortunate as to obtain a Barred Warbler, *Sylvia nisoria*, on September 4th, 1886 (*cf.* Norwich Nat. Tr., iv. 37), shot another within half a mile of the same spot. Both of them were resting in thick bushes of the shrubby saltwort (*Chenopodium fruticosum*), which is such a characteristic plant at Cley and Blakeney, and in each case the bird when shot clung parrot-like to the branches; indeed for a Warbler its feet are thick and powerful. This second example proved to be a male by dissection, and apparently a young bird; its dimensions were — length, 7·2 in.; expanse of wing, 10·3 in.; wing from carpus, 3·4 in. The colour of the beak was brown; base of the lower mandible and mouth flesh-colour; legs light blue. The contents of the stomach, microscopically examined by Mr. T. Southwell and Mr. J. Edwards, were considered to consist almost entirely of the remains of earwigs; also a small carabideous beetle, *Acocephalus nervosus*, and the limbs of a minute crab. A Blue-throated Warbler, shot the same day, was found by Messrs. Southwell and Edwards to contain a preponderance of the remains of *Acocephalus nervosus*, one *Philænus spumarius*, and one small shell of *Littorina rudis*. A Whidah bird (*Vidua principalis*, Linn.) was shot at Trimingham, supposed to have escaped from a vessel some time this month.

In October the prevailing wind was S.W. A Stone Curlew, to all appearance of a pure white, took up its abode during the summer not far from Brandon, and was many times observed. As autumn drew on it joined the flock of birds of its species which annually assembles in that neighbourhood. There it was shown, on October 8th, by Messrs. F. and E. Newcome, to Prof. Newton, who informs me that he had a good view of it both on the wing and on the ground, where, naturally enough, it was very conspicuous. Before the close of the month, as I learnt from Mr. Upcher, it had disappeared.

In November the prevailing winds were E. and S.W. About the 8th a Nutcracker, *Nucifraga caryocatactes*, was shot at Haunworth: it was a female, with rather a thin beak measuring along the ridge 1¾ inch, and the upper mandible projected ⅛th inch. The depth of the beak at its base is almost ¾ inch.

At the beginning of November a Sea Eagle took up its quarters at Postwick and Plumstead, and, Mr. Buxton and Mr. Birkbeck having given their keepers orders to protect it, remained there a long time, but on December 23rd it was found dead. Mr. Southwell and I went several times to look for it, but could not obtain a view of it until at length we saw it in the hands of Mr. Gunn, of Norwich, for preservation. The prevailing direction of the wind this month was S. and S.W.

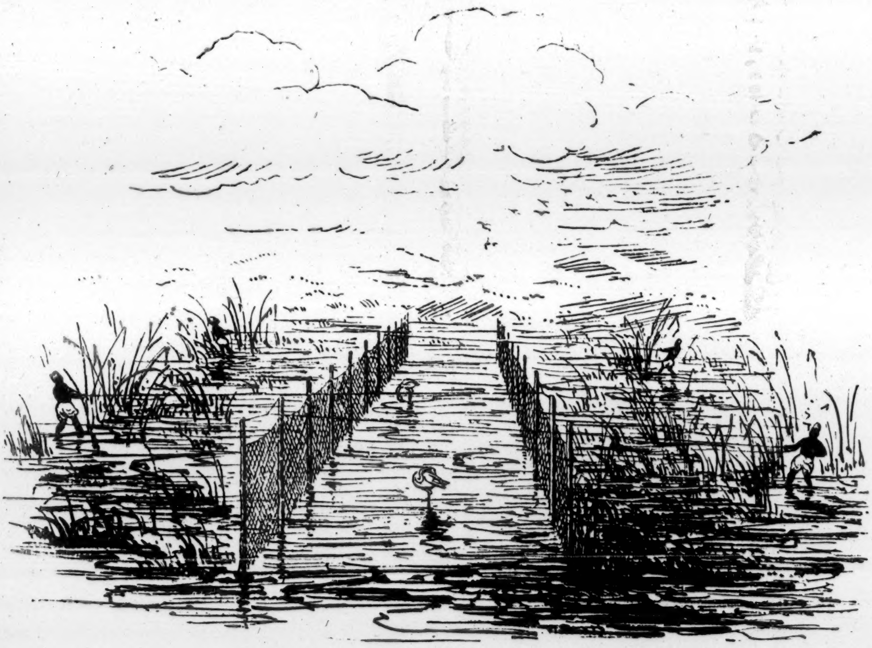
FLAMINGO CATCHING IN LOWER EGYPT.

It has long been known that large numbers of Flamingoes are annually taken alive by Arabs, at the mouths of the Nile, for export to Europe, but the precise mode of capture has until lately been unexplained.

We are indebted to Lord Lilford for having placed in our hands an interesting correspondence which has resulted from his enquiries, and those of Dr. G. H. Kingsley, who has recently returned from Egypt, and which embodies information obtained on the spot, with the assistance of Mr. W. P. Burrell, H.B.M. Consul at Port Said.

From the letters forwarded it appears that the capture of live Flamingoes is made chiefly at Lake Menzaleh, between November and the end of the winter. It is effected by means of two nets from 20 to 25 yards long, and from 3 to 3½ yards wide, connected at the two ends of one side by a stout cord. To these nets are attached at intervals upright poles, from 3 to 3½ yards high, at the foot of which are fastened small wooden stakes, each about 18 or 20 inches in length, one-half of which is driven into the ground below the water, the other half remaining above. To the top of each pole is fixed a strong line, about 50 or 60 yards in length, to be held and pulled by a man at the proper time, the cords of the *right hand* net being pulled from the *left*, and *vice versâ*, so as to cause the two sides to fall towards the centre, and meet each other like the ordinary "clap-net" employed by English bird-catchers.

When the proper time arrives, the men employed at this work, to the number of five or six in each boat, go in search of the Flamingoes at night, and as soon as they can make them out, standing where the water is from 18 inches to 3 feet deep, they stop the boat about a hundred yards off and, commence to lay down their nets and apparatus under water, driving into the ground for half their length the little stakes to which they are attached. They then stick into the ground under water a lot of slender reeds about a yard high, and at a little distance apart, so as to form a sort of lane about 10 or 12 yards wide, leading up to, and passing on either side of, the nets. All being in readiness, the men row round and put up the Flamingoes, driving them towards the lane of reeds, where, the water being comparatively shallow, they are almost sure to alight. At a given signal the men who are holding the cords pull over the nets and a number of birds are caught, when the men hurry up to get hold of them. Crossing their wings over their backs (like our English decoymen do when they want to keep alive the ducks captured by them), they put them into the boats and take them away for sale to Damietta, Matarieh, and Port Said, where they are disposed of at a price varying from 6 to 7 and 8 Egyptian piastres apiece.



FLAMINGO NETS IN LOWER EGYPT.

The Egyptian piastre, which is of silver and the exact size of our threepenny piece, is of no greater value, so that the cost of a live Flamingo first-hand at the port of delivery may be said to be from eighteenpence to a couple of shillings.

This information is derived from a letter in French addressed by a resident at Damietta, Mons. A. Anhoury, to Mr. Burrell, H.B.M. Consul at Port Said, and kindly forwarded by him.

Another account, by Dr. Couvidon, forwarded by Dr. G. H. Kingsley, while confirmatory of the mode of capture above described, adds some further details of interest which are worth quoting.

It appears that the poorer Arabs who do not own boats are obliged in this pursuit to rely on their own individual exertions, and have to resort to a different stratagem.

The Flamingoes never swim in deep water, and are generally to be seen in the proximity of small islands without going at any time out of their depth, but standing on their long legs, hardly ever wetting their breast-feathers. They put their heads, however, under water in search of food, and can remain in that position a long time without detriment. They are very watchful, and place sentinels (as Wild Geese do) to give notice of the approach of an enemy. These sentinels watch while the rest of the flock sleep, standing on one leg, the long neck folded backwards in graceful curves, the head reposing on the back, half buried in the scapular feathers. At the first cry of alarm they are all off.

These habits being known to the natives, says Dr. Couvidon, "the Arab who is poor and without capital goes at night, sinking himself in the water up to his mouth, his head covered with grass from the lake, crawls noiselessly near the sentinel, which he seizes by the legs and draws swiftly under water, before it can cry out or give an alarm; and by keeping the beaks of his victims closed he can secure a certain number before the flock has awakened and departed."

There is yet another plan when the fowler is single-handed. He crawls sufficiently near to the birds to throw a net over them, and in this way catches sometimes as many as six or eight, and even more, at a time.

Referring to the method first above-mentioned, Dr. Couvidon states that a few stuffed Flamingoes are used as decoys, and are stuck up in the centre of the net, watch being kept by the fowler until a flock arrrives, which they generally do late, between 11 and 12 o'clock. Seeing the stuffed ones apparently asleep, with their heads under their wings, they gradually alight, and as soon as they have settled down for the night, the Arabs at a given signal pull all at once on the ropes, the two sides of the net fall towards the middle, and perhaps the whole flock, or the greater part of it, is secured.

Dr. Couvidon adds that he has seen Wild Ducks captured on Lake Menzaleh in a similar manner.

THE LATE WILLIAM BRODRICK.

To "give honour where honour is due" has always been our aim, and, when death has robbed us of a master of his craft, to testify with gratitude to the worth of his example. A succession of keen votaries of the kindred sports of hunting, fishing, and shooting has at all times precluded the risk of their extinction; but it has been otherwise with the equally ancient though less practised sport of hawking, which, but for the efforts of a few, in the face of many obstacles, has often stood in danger of being abandoned. As one who by his published works and private enterprise has done perhaps more than any of his generation to popularise and encourage the art of falconry in England, the name of William Brodrick deserves to be remembered, and his recent death, at the ripe age of seventy-four, will be regretted almost as much by those who knew him only by reputation as by the many personal friends whom he has left behind him.

Mr. Brodrick died on December 21st last, at Littlehill, Chudleigh, North Devon, where he had lived for more than twenty years, esteemed by all who knew him. Having formerly held the command of the Chudleigh Volunteers, a number of his old corps, commanded by Colonel Lord Clifford, attended his funeral, eight of the non-commissioned officers officiating as bearers. Born in London, where his father was a barrister of some eminence, William Brodrick was educated at Harrow and University College, Oxford; and, although he was wont to say *à propos* of his lifelong love for natural history, that "all he learned at Harrow was how to catch birds," yet, as he took his

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degree at Oxford, it is clear that he must have learned something more. He studied medicine at Edinburgh, but never chose to practise, and, after his marriage, he settled at Belford, in Northumberland, where he enjoyed the great advantage, to a young and enthusiastic beginner in falconry, of hawking over the moor of his uncle, Mr. Selby, of Twizel, whose name with ornithologists is "a household word." In those early days he procured, trained, and used very successfully many fine eyess Falcons and Tiercels; Peregrines from the northern coasts, notably one from St. Abb's Head, Berwickshire; and when, later on, he moved to the South of England, and resided at Bath and Ilfracombe, he for several years procured young Peregrines from Lundy Island, discovering, like every other falconer who has been lucky enough to obtain birds from this well-known eyrie, that in a Lundy Hawk he had a falconer's treasure. Falcons from Lundy were much valued in the Middle Ages, and their praises have been echoed by Charles Kingsley, in his 'Westward Ho.' Well do they deserve it, although of late years the persistent robbery of two eyries, occupied for ages on the island, has resulted, it is feared, in the desertion of both. Indeed, hardly a nest of this noble Falcon on any part of our coast, save in a few inaccessible spots, escapes the greed of so-called collectors, much to the regret of naturalists and falconers. After leaving Ilfracombe Mr. Brodrick settled at Chudleigh, but, the neighbourhood there being quite unsuited to the practice of his favourite sport, he had reluctantly to give it up, and solaced himself by keeping, as pets, most, if not all, of the Hawks and Falcons usually employed in modern falconry, except the Indian Luggers and Shaheens. Under his care examples of the Greenland, Iceland, and Norwegian Jerfalcons, Sakers and Lanners lived for years, a source of admiration to all who saw them.

But it is as a writer on falconry, and an admirable draughtsman and painter of birds of prey, that Mr. Brodrick was and will be widely known. In 1855, in conjunction with his old friend Capt. F. H. Salvin (who from his lifelong devotion to falconry may well be called the father of the craft in England), he brought out the first edition of that much-admired work 'Falconry in the British Isles,' the capital illustrations to which were all drawn by him from the life, the letterpress being the joint production of Capt. Salvin and himself, and, like the plates, a labour of love.

The figures of Hawks are in their way inimitable, and bear comparison with the best work of his friend and only rival in the same line, the accomplished animal painter Joseph Wolf. The letterpress has only one fault, that of being too short. It contains, however, almost all that modern falconers deem essential to be told, the works of the old masters—even the best of them—being overladen with errors, notably in the many fanciful and absurd recipes for the cure of real or imaginary diseases in Hawks. In this direction it must be confessed the work above mentioned does not err, though we opine that modern falconers would yet be grateful for a somewhat longer pharmacopœia than is therein contained. In 1873 a second edition of this work appeared through the same publisher (Mr. Van Voorst), when, the original lithographic stones having been destroyed, the plates were re-drawn by Mr. Brodrick, with some additions. Previously to this, however, namely, in 1865, the same hand had produced a charming series of folio plates of Hawks, entitled 'Falconers' Favourites,' in which he gave life-sized coloured figures of a famous Tiercel "Comet," from Lundy, and "Hurricane," the best Dutch passage Falcon he ever possessed, with other portraits of a Goshawk and Sparrowhawk, Hobby, and Merlin. Nor did Mr. Brodrick's talent end here. A lifelong study of the habits and attitudes of birds of prey, in motion and at rest, coupled with unusual skill as a taxidermist, resulted in the production of some of the most remarkable groups of stuffed birds with which we are acquainted. With the exception of his friend Mr. John Hancock, of Newcastle, no amateur in this line has ever rivalled him in his best efforts. His house was full of stuffed birds, and some of his finest cases, having to be moved for want of room, were lent for exhibition to the museums of Bath and Exeter, where we have often admired them, and where, it is to be hoped, they will be allowed to remain. Nor were the smaller kind of birds neglected. Of Canaries especially Mr. Brodrick was an excellent judge and successful exhibitor, possessing the purest, and latterly almost the only, representatives of that singular variety known as the "London Fancy." Like all admirers of this particular strain of late years, he found them sterile and troublesome to breed and rear, and towards the end they dwindled down to one or two, and finally became extinct, for it is believed that there are not now to be found any good representatives of this once much-prized breed.

It is curious that all young "London Fancies," until their first moult, externally resemble young "Lizards;" but, while the "Lizard" undergoes no material change of colour or markings, the London Canary changes from the sober hue of a brown-spangled bird (like a Linnet) to a splendid deep uniform yellow, or equally fine buff or pale yellow colour, with black wings and tail, and ever after so remains.

It is to be regretted that Mr. Brodrick's shy and retiring disposition prevented his talents from being more widely recognised and appreciated, and it will probably surprise some of our readers to learn that he has left behind him some of the most remarkable drawings (many of them coloured) of the external form and internal structure of British Mollusca and Sea Anemones* which have perhaps been ever prepared under high microscopic power—a feat the difficulty of which is well known to all who have attempted a similar task.

Here we lay down the pen, certain that the memory of William Brodrick will long be held dear by all who had the advantage of knowing him, and that nothing would have pleased him better than to have known (as it is feared he did not know) how very highly his 'Falconry in the British Isles' was esteemed by the many falconers and naturalists who may happen to peruse these lines.

NOTES AND QUERIES.

Cambridge Entomological Society and Field Naturalists' Club.—At the Annual Meeting of this Society, held on February 15th, it was decided to collect information for the publication of a Fauna of Cambridgeshire and Huntingdonshire. It is hoped that all those who can furnish lists of species found in the two counties, or give any other information, will communicate with the Secretary, F. V. Theobald, F.E.S., St. John's College, Cambridge.

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* A new British Sea Anemone, *Phellia Brodricii*, which he discovered in August, 1857, on the rocks at low water on Lundy Island, was named after him by the late Mr. P. H. Gosse, who described it in the 'Annals and Magazine of Natural History' (ser. 3, vol. iii. p. 46), and subsequently figured it in his 'History of British Sea Anemones and Corals' (pl. viii., fig. 2).

MAMMALIA.

White Hares in Nottinghamshire.—In October last the Earl of Burford shot at Bestwood Park, near here, a full-grown white Hare with eyes of a pale blue, so often seen in white varieties. A white Leveret also was caught, soon after it had left the nest, in the previous April. Possibly they were both of the same litter. The Duke of St. Albans has kindly presented them to me for the variety collection here. In December last a white Hare was shot at Rufford, and it is very curious that these should have occurred in one year, especially as there are now so few Hares left—not one to twenty of former days. No white Hare has occurred about here for forty years to my knowledge, though Hares used to swarm all over these parts.—J. WHITAKER (Rainworth, near Mansfield, Notts).

The Rabbit Pest.—Mr. W. Rodier, of Tambua, Cobar, New South Wales, has forwarded to this Society a printed sheet, containing, as it appears to me, by far the best suggestion yet made for the extermination of Rabbits—a subject to which my attention has been repeatedly called by various correspondents in the Australian colonies, where, as is well known, the damage done by these animals is enormous. Mr. Rodier states that his plan has been in operation at his station in New South Wales for about eight months, "with the utmost possible success," and has cleared the country of Rabbits. It is a very simple plan. Ferrets and nets are used in the usual way to capture the Rabbits, but while all the females taken are destroyed, the males are turned out again uninjured. The results of this mode of operation are that the male Rabbits, as soon as they begin to predominate in numbers, persecute the females with their attentions, and prevent them from breeding. They also kill the young Rabbits that happen to be born; and even, as Mr. Rodier asserts, when they largely predominate in numbers, "worry the remaining does to death." This is all strictly in accordance with what we know takes place under similar circumstances in the case of other animals, so that we can readily believe it to be likely to happen. The ordinary mode of trapping, as Mr. Rodier points out, is more likely to increase the number of Rabbits than to diminish them. For reasons which he clearly explains, more buck Rabbits are always killed by the trappers than does. Thus the does predominate in numbers, and, a few bucks being sufficient for a large number of does, are perpetually breeding and increasing the stock. The plan advocated by Mr. Rodier is so simple and easy that I cannot doubt it will be widely followed when known. No disease that might otherwise cause injury is introduced, no other noxious animal is proposed to be imported, but advantage is taken of the well-known natural laws which regulate the increase of life to effect in this instance a salutary decrease.—P. L. SCLATER (Zoological Society of London, 3, Hanover Square, W.).

A new Australian Mammal.—Allow me to offer a brief remark. I see in 'The Zoologist' for March (p. 105) that you suppose *Dactylopsila palpator* (Milne-Edw.) to be from *Australia*, but on p. 176* 'Mémoires publiés par la Soc. Phil. Paris, 1888,' I read,—"Le Muséum ne possède qu'un seul exemplaire de cette espèce: c'est un mâle très adulte, venant de la côte *sud de la Nouvelle-Guinée*.—F. A. Jentink (Leiden).

Fawn-coloured Variety of Mus decumanus. — On January 14th a curious variety of the Brown Rat was trapped at Holbrook, near Ipswich. It was fawn-coloured above, white beneath, and had pink eyes.—E. W. Gunn (89, Princes Street, Ipswich).

BIRDS.

Lapland Bunting near Brighton.—On February 24th I received a male Lapland Bunting, *Calcarius Lapponicus*, which was caught by a birdcatcher about a mile from this town. It is of rare occurrence here.—C. Brazenor (Brighton).

Hen Harrier in Essex.—An adult female of this species was shot on December 20th, 1888, at Walton-on-the-Naze, Essex. The ovaries were very small, and in its crop I found a portion of a Thrush in a semi-digested condition.—E. W. Gunn (Ipswich).

Red-breasted Merganser in Essex.—An adult male of this species was shot on the beach at Walton-on-the-Naze on January 16th last, and was sent to me for preservation. It was in good condition, and had recently fallen in with a shoal of Sprats, for its gullet contained no fewer than twenty-three (some half-digested), all averaging about three inches in length, and amongst them I found one small Whiting. They were all packed in close, like Sardines. The gizzard and intestines were full of the remains of fish.—E. W. Gunn (89, Princes Street, Ipswich).

Great Grey Shrike near Ipswich.—A female specimen of this bird was brought to me on the evening of January 28th, having been caught by a birdcatcher earlier in the day at Whitton, near Ipswich. It had struck and instantly killed his call-bird, a Goldfinch. Upon dissecting it I found the gizzard quite empty and the bird in poor condition, evidently half-starved.—E. W. Gunn (89, Princes Street, Ipswich).

Ornithological Notes from Wexford.—In view of the preparation of a new edition of Thompson's 'Birds of Ireland' the following notes may be useful to the Editors:—In the autumn of 1885 an Osprey was shot at Courtown, and sent to Mr. Williams, of 2, Dame Street, Dublin, for preservation. On March 1st, 1886, a Brambling was shot near Adamstown, by the Rev. T. Manning, after a fall of snow: the bird is a rare winter visitor to Co. Wexford. August 28th, 1886: Dr. Gibbons, of Rosslare, tells me that three Hoopoes were shot in his part of the county about this date. No. 1 was shot in his garden at Rosslare by his man, during his absence in Dublin. No. 2 was shot at Bargy Castle (which is about five miles south of Rosslare) about the same time. No. 3 was received by Mr. J. Wheelock, bird-stuffer, Wexford, to be stuffed for some man living in the Faythe, Wexford: it was shot somewhere not far from Wexford. Mr. Wheelock told Dr. Gibbons that four or five Hoopoes had been brought into his shop during the four or five years preceding 1886. On October 29th, 1886, a female Buzzard was caught, in an exhausted condition, at Stokestown: some men were cutting reeds, out of which it rose when disturbed, but flew quite weakly and was easily caught. There is at Stokestown a male Hen Harrier, shot in the Co. Tipperary. On August 7th 1887, I found a Wren's nest at Kilmanock, containing two eggs; it is such an unusually late date that I think it worth recording: the nest was forsaken, owing, I think to my finding the bird on the nest and disturbing her. On September 11th, 1887, another late nest was found at Kilmanock, —a Wood Pigeon's—containing two eggs: the nest was lined with dry grass and a few feathers. On October 2nd, 1887, a Little Bittern was shot at Drinagh, about two miles south of Wexford, as I learn from my friend Mr. R. J. Ussher: it was sold by Mr. Wheelock, of Wexford, to the Dublin Museum. In June, 1888, Mr. R. J. Ussher received a Sand Grouse from Mr. J. Bent, of Rosslare. I have received the following further particulars about it from Mr. Bent; it was shot by his brother, in his own land, near the sea-shore. . . . "I have been told," he says, "of a flight of them a week after that was seen in Mr. Meldon's virgin soil land." During this month a strange bird was reported to me by a coastguard at Fethard; it frequented the gardens there for about a week, and evaded all attempts to shoot it: this bird was described to me as being in size between a Thrush and a Jackdaw, its colours being green and red; it was said to be like a Parrot, but not one. This description, if it can be relied on, comes nearer to the Green Woodpecker than any other bird I know,—a bird which has, I believe, only twice occurred in Ireland. On October 24th, 1888, a Water Rail was shot near Adamstown, and sent to me; the bird is probably not rare in suitable localities throughout the county. On December 20th, 1888, or about this date, a nearly pure white Thrush was shot at Canagren Hill, Ferns: it has since come into my possession, and the only sign of dark colour in its plumage is a very slight tinge on the back. I heard of a "white Blackbird" (male), said to have been caught near Arthurstown this winter, which had "a few black feathers in his tail." There is also a Blackbird at Arthurstown, shot in 1886, with more white in his plumage than black; while I have seen them with large white spots on the back— so that partially white Blackbirds would seem to be not at all rare in this district. A white Magpie was shot at Stokestown a few years ago.— G. E. Barrett-Hamilton (Kilmanock, Co. Wexford).

Sand Grouse near Redcar.—I regret to state that three more Sand Grouse, *Syrrhaptes paradoxus*, have been killed near Redcar. One, a female, was shot from a flock of seven on the South Gare Breakwater, at the Tees Mouth, on February 14th. Another (also a female) was killed at the same place on the following day; and a third, a male, was picked up on the sands on the 16th. It had an old wound in the side,—the cause of death,—was very poor in body, and the flesh was quite putrid. Both the others were in good condition.—T. H. Nelson (Redcar).

[How about the Sand Grouse Protection Act, which has been in force since the first of February?—Ed.]

Notes on Birds observed at Sea.—Every fact connected with the migration of birds is I think worth recording, and on this principle I send you some extracts from letters received from my son, whose duties as a sailor on the 'Sobraon' have caused him for some years to pass between England and Australia, leaving home generally about September 20th. He writes me that this year from some cause land birds have been in greater abundance than he has ever seen them. From lat. 15° N. to 5° N. and long. 20° to 23° W. birds were very frequent, especially Swallows, and in company with these Swallows were three Kestrels, all of which came on board and were caught (one had white claws) and carried alive to Melbourne. The one he caught he saw chase and capture a Swallow, and, what was a new fact to him, it plucked and ate the Swallow while on the wing. He gave this bird to the Melbourne Zoological Gardens. Two small Owls, the smallest he ever saw, were also caught, but he could not recognize them; they only lived for a few days. Some Quails came aboard, but they were treated in a most inhospitable manner, being utilised as food for the previously captured Hawks,—a fate he much regretted, as he thinks he might have been able to preserve them for the Melbourne Zoo also. Several flocks, containing a dozen or so of individuals of some species of birds quite strange to him, passed the ship. On October 1st, lat. 49° 15′ N., long. 5° 56′ W., in fine calm weather, they passed a dead Whale; a boat was lowered to examine it, and it was found to be floating belly uppermost with the head a long way under water; the skin of the belly was of a whitish colour, with deep longitudinal cuts or folds in it; the length was estimated at about seventy feet. He considered it, from all he could gather, to be a specimen of *Balænoptera musculus*, and in this he was probably correct. It was accompanied by a few Sharks, but he did not think it was far enough gone to attract the birds. In running their Easting down they saw the usual birds,—Petrels, Albatrosses, and so on. One Albatross dived under the water for something sinking. This, he says, he never saw the large Albatross do before, although he has seen all the smaller ones diving frequently. In this note of my son's, who is a capital observer, there is one fact stated quite new to me,—that is, the possibility of a Hawk plucking and devouring its prey on the wing: certainly there was nowhere it could rest for the purpose, but I should have thought the difficulties of the operation would have quite rendered it impossible. Have any of the readers of 'The Zoologist' seen a similar case? — HENRY LAVER (Colchester).

Method of Fishing adopted by Diving Birds.—As I have ascertained that the following fact is not well known, I send you this account in the hope that it may be of interest to naturalists and to the general public. Anyone who lives in the Western Hebrides will have often watched on a calm day the sea-birds feeding with noisy clamour in the sea-lochs and about the numerous islands. This is especially the case in August, when the shoals of small herring are very plentiful. Some years ago, when in a sailing-boat off the west coast of Mull, I caught with a hand-net a dishful of these small fry as they swam along the surface of the water. Last year, noticing from a steam-launch the birds congregated in great numbers at one spot, the idea struck me to steam to the place and try to get a share of the birds' repast. The idea was at once carried out. I stood on the prow with landing-net in hand, and the launch was steered towards the birds. As we drew near, the banqueters flew away with evident dissatisfaction at the interruption, a few of the more greedy making their last hasty dives. In another moment we were at the spot, and I saw, to my intense surprise, about two feet under the surface, a large reddish brown ball, two to three feet in length and two feet in depth. I made a frantic swoop with the net into the ball, and brought on deck half a pailful of the sea-birds' dinner. Even as we passed we could see the great living ball sinking and breaking into pieces. This year I and others have tried the same spot with great success. Sometimes the ball has sunk too deep to be reached; sometimes there was no ball to be seen; but on the most successful day I filled a pailful in three hauls. In September we saw no ball, because, perhaps, the fish had grown too large for the birds to manage. As far as I can judge, the *modus operandi* is carried out by the divers, who surround a shoal and hem them in on all sides, so that the terrified fish huddle together in a vain effort to escape inevitable destruction. The divers work from below and other sea-birds feed from above; and, as in some cases after the birds had been at work for some time I saw no ball, I suppose not one fish is left to tell the tale. I must leave to naturalists the real explanation of the matter; but I may mention that, when disturbed by the boat, the divers seem to come to the surface in a great ring round the scene of their feast. I may also mention that once, when the boat was still 300 or 400 yards away, the birds suddenly rose and whirled about with frightened screams. I wondered what could be the cause, until I saw the round back of a porpoise rolling lazily round at the exact spot, and then rolling back again. When we steamed past there was no sign of a ball. What two delicious mouthfuls for the porpoise!—COMPTON (Loch Luichart, Ross-shire, N.B. [From 'Nature.']

Notes from Breconshire.—The past season has been a fairly good one for Woodcocks, but I have observed hardly any Fieldfares or Redwings. Some rare visitors in the shape of White-fronted Geese have been killed at Llangorse Lake, near here, out of a flock of seven: they were exceedingly tame, and looked as if they had come a long way, as they seemed tired; three were killed, and if large shot had been used probably nearly all would have shared the same fate; but on the following day they had recovered themselves, as it was found impossible to get within shot of them. A white, or nearly white, Woodcock, was lately killed by a gentleman in this county, and I am sorry to say was eaten! Mr. Crawshay killed a fine Bittern on the course of the old river near Talybont, which I shall have the pleasure of inspecting when he gets it from the birdstuffer's. A curious light brown coloured Jackdaw has also been killed by Mr. Butler, at Llangoed Castle, in this county. I fear the White or Barn Owl is nearly extinct about Brecon, as I never see one now by any chance. Can it be that the Brown Owl drives it away? The Kite does not increase much, although I can hear of none being shot or trapped, and, though several pairs still breed in the country, I fancy the young ones desert us. I constantly hear of one or two of these birds being seen near here, but I think were the same pair, or possibly two pairs, as Kites cover such a quantity of ground in the course of a day. The same remarks apply to the Buzzard, but this bird is much more plentiful with us than the Kite. In very old Ravens do the breast-feathers get like the hackles of a cock? I saw a bird that was killed near here; it had the appearance of great age and was in splendid plumage, but the breast-feathers resembled the neck hackle of a black game cock, and were glossy in the extreme. A curious circumstance has been commented on by others besides myself, during the past season only, in several parts of the county, and that is the great preponderance of hen Pheasants over cocks in wild bred birds. During Christmas week I killed what at first sight appeared to be a good specimen of the old English Pheasant, *Phasianus colchicus*: it was a fine wild-bred bird, very red on the breast and very dark on the under parts: on carefully examining it, however, I found just the suspicion of white on the extreme edge of a very few neck-feathers, showing the faintest cross of *torquatus*. The difference was distinctly apparent when compared with a Chinese bird; the English bird very much bigger, much redder on the breast, and much darker beneath whilst the rich red colour made the golden colour of the Chinese bird look quite a sickly yellow in comparison. I begin to despair of ever killing a true old English Pheasant in this county.—E. CAMBRIDGE PHILLIPS (Brecon).

Woodcocks.—It might be interesting to ascertain the experience of your readers in the matter of Woodcocks during the past season. Here in Oxfordshire both the numbers and weights of the birds have been abnormal. This would seem to point, so far as numbers are concerned, to the mildness of the weather, which may have arrested them on their westward passage, and, so far as weight is concerned, to the sufficiency of food they have found,—due also, perhaps, to the softness of the ground. During the third week in January one of my keepers shot two Woodcocks, right and left, each of which weighed over a pound, thus beating Sir F. Chantrey's record so far as weight was concerned. Woodcocks are said to have been shot weighing nine or ten ounces more, but I doubt if any living person has seen them. If it should prove that Woodcocks have been more scarce than usual in Devonshire last season, I think my theory may be assumed to be correct. I am given to understand that these birds have been more abundant than usual this winter in the east of Ireland.—E. W. Harcourt (Nuneham Park, Abingdon).

[We do not know how our correspondent ascertained the weight of Chantrey's Woodcocks. It is not mentioned in the extracts from the Holkham Game Book, nor in Mr. Stanhope's account of the well-known feat printed in Muirhead's 'Winged Words on Chantrey's Woodcocks,' published in 1857.—Ed.]

Gadwall in Somerset.—The Gadwall seems to me of sufficiently rare occurrence in this county to make the capture of one worth recording. I saw a female of this species at Mrs. Petherick's, the birdstuffer at Taunton, early in February, and wrote to the owner—Mr. Hill, of Langport—for some information as to its capture, and in due course received the following account:—"The Gadwall duck was shot on January 10th, 1889, in Sedgemoor, about three miles from Langport: there were a duck and drake together, but the latter managed to get away. A drake was shot in the same district about three years ago."—Cecil Smith (Bishop's Lydeard,

Ornithological Notes from Yorkshire.—The past autumn in this part of Yorkshire was marked by the occurrence of several of the more uncommon species of predatory birds. During the month of October and early part of November I heard of the capture of two Peregrines, two Rough-legged Buzzards, and a Hen Harrier. A Hobby also was reported, but on inspection proved to be a Merlin. One of the Peregrines was shot under the Castle Cliff about the end of the first week in October, and was an adult and rather large bird, probably a female. The second specimen was shot on the coast between Scarborough and Filey, in a little bay known to our fishermen as Pudding Hole. It is a falcon of the year, and measured 19½ inches from beak to the extremity of the tail, and

44 inches from tip to tip of the expanded wings—a fine bird in good plumage. The Peregrine has from time to time been known to breed in the vicinity, and doubtless would do so again annually were it allowed to remain unmolested; but when one by chance makes its appearance on the coast, it is generally shot by someone lying in wait near the haunts of the Rock Doves. The first Rough-legged Buzzard was also procured a short distance from here. It is in good plumage, but as this species varies so much in the markings I cannot speak as to the age or sex. The other example was recorded in 'The Yorkshire Post' of November 7th, as having been shot near Meanwood (a few miles from Leeds), and described as in excellent plumage: it measured 56 inches from tip to tip of expanded wings. The Hen Harrier above referred to was killed a little way inland, at the beginning of October, in a state of moult. A young Red-backed Shrike was obtained, about the same date, near Hackness. On Nov. 1st a great passage of Gulls took place, when, I am informed, thousands—said to be Kittiwakes—crossed Filey Brigg on their way south, and some hundreds were shot to send to London, where the gunners can sell unlimited numbers at sixpence each. All light-coloured small Gulls are "Kitt*ia*kes." A few days later I visited the Brigg, and saw many Great Black-backed Gulls, some fine old birds and some immature ones; also some large flocks of Ducks,—Common Wild Ducks, some Wigeon, a large flock of Common Scoters, a Common Sheldrake, and three Purple Sandpipers. I heard no report of any Glaucous Gulls being seen. Mr. Fountain, of the 'Ship Inn,' showed me a Common Guillemot, of immaculate whiteness, that was shot on December 2nd, 1887, by William Jenkinson, of that place. The beak, irides and legs are described as being of a lemon-colour when in a fresh state. Woodcocks arrived on Nov. 3rd, in larger numbers than I ever remember near Scarborough, it being estimated that about forty were shot on Oliver's Mount alone, and one in the grounds of the Cliff-Bridge Company, about a hundred yards from where I write. I may add to the birds above mentioned two examples of the Sooty Shearwater, *Puffinus griseus*, shot near here,—one, if not both, on October 25th; also a female Eider, at Filey, on November 12th. In conclusion, I take this opportunity to draw attention to a notice of the Little Egret, *Ardea garzetta*, given by me in 'The Zoologist' (1881, p. 213); I have since had reasons to believe that it was not a British-killed specimen, and I was misled, though at the time confidently assured it was authentic, and I now very much regret such notice should have been sent for publication.—Robt. P. Harper (38, Esplanade, Scarborough).

Wilson's Petrel in the Isle of Wight.—I learn that the supposed Bulwer's Petrel alluded to by Mr. Rogers (p. 28) has the lower part of the back white, and pale yellow oval patches on the webs of the feet. Hence it is to be inferred that it is not Bulwer's, but Wilson's Petrel, *Oceanites oceanica.* It was found dead on the shore of Freshwater Bay, Isle of Wight, last autumn, after a severe storm, and is now in the collection of Dr. Hollis, of Freshwater. This is the second Wilson's Petrel which has been picked up at or near Freshwater (*cf.* Yarrell, 'British Birds,' iv. p. 50), or at any rate, which is said to have been found there.—J. H. Gurney, Jun. (Keswick Hall, Norwich).

Reported Nesting of the Black Redstart in Essex.—With reference to the record by Mr. W. R. Ogilvie Grant (Zool. 1888, p. 390) of this species having bred, early in May last, "in a hole in an ivy-covered oak tree" growing in Danbury Park, having, through the kindness of Mr. Grant himself, had an opportunity of inspecting the nest and eggs at the Natural History Museum, I should like to say that, in my opinion, the eggs and nest are undoubtedly those of a Robin. The white variety of the eggs of this bird may almost be called common, and I have repeatedly either taken or heard of such in this district. The nest is composed externally of dead hazel- or oak-leaves, the interior being constructed of bents, fine roots, and skeletonized leaves, lined with fine grass and a very little hair. I consider it a typical Robin's nest in all respects, except that it contains no moss. The two eggs which have been preserved differ much in size. The larger and normal one measures ·8 by ·6 of an inch, almost exactly, these being the average dimensions of Robins' eggs. The other egg is very much smaller, and is evidently an abnormal egg, such as might be expected from a weak or injured Robin laying colourless unspotted eggs. I have not yet seen the site of the nest, but I feel confident the nest is that of a Robin, and that the "dark-coloured bird with a red tail," which Mr. Grant's informant thought she saw leave the nest was a Redstart with a nest somewhere in the immediate vicinity. The breeding of the Black Redstart in England has been several times recorded on very doubtful grounds, but never yet satisfactorily established.—Miller Christy (Chignal St. James, Chelmsford).

Diving Powers of Gannets.—Having read Mr. Collison-Morley's enquiry about the diving powers of Gannets (p. 25), I am induced to forward the following notes on the subject. I have at different times had the pleasure of watching great numbers of Gannets feeding, both when immature and adult, and I can assure those who have never seen it that it is a treat that will repay a walk of miles. Their mode of feeding is quite different to that of any other large sea-birds. The nearest approach to it is seen in the larger Terns, but the latter seize their prey either on or near the surface, and seldom go out of sight; whereas Gannets will remain immersed for some seconds, the time, of course, varying with the depth at which the fish are swimming. As to the depth they may be able to dive, I am unable to form an idea, nor have I ever read or heard of anyone attempting to fix a maximum depth. Where I mostly saw the birds in numbers was in that picturesque bay inside the Farnes group of islands, and stretching north and south from Holy Island to North Sunderland. There I have often witnessed the alternate falling and rising, or rather the plunging and ascending, of what we may liken to enormous snow-flakes, with an occasional dark-coloured immature bird amongst them. The flight of the Gannet is exceedingly light and graceful, yet powerful, and in or on the water its buoyancy is remarkable. On detecting a fish, it quickly wheels round, ascends a few feet, then drops perpendicularly with a velocity that is startling to witness, so suggestive of the bird's destruction. In a few seconds it re-appears on the surface as sudden and buoyant as a liberated bladder. I believe only one fish is secured at each plunge. On coming to the surface they turn head to wind, which no doubt enables them to take wing more easily. I should not consider the Gannet a "diving-bird," in the strict sense of the word, for I have never seen it attempt to go under except by plunging from the air. It may be able to dive perhaps if wounded and pursued, as many sea and shore-birds will do. I have seen the Oyster-catcher, for instance, and other shore-birds swim and dive when wounded so as to make it very difficult to secure them. There is one peculiarity about the Gannet that I have never seen noticed in any work on Natural History: the bird seems susceptible either to a sort of stupor or fear, paralysing its power of flight, of which only one other instance has come under my notice, in the case of Richardson's Skua. Out of five specimens of the Gannet in my collection, three were taken alive either from the water or beach, and to all visible appearance were unhurt. Two are fine adult birds, the other immature, in the pied plumage.—JAMES SUTTON (Durham).

Scarcity of the House Martin in Hampshire.—For some years past I have noticed that Martins have gradually diminished in numbers in this immediate neighbourhood. As a boy I well recollect the rows of nests which were formerly built underneath the overhanging eaves of many houses in the street, and the not over-clean appearance of many of the houses in consequence, especially after the young were hatched. The nesting-places still remain, but the birds have almost disappeared: during the past summer I have seen but one solitary nest, and in that I believe no young were brought out. Perhaps uncongenial weather might account for such a state of affairs; but even people who take no particular interest in birds have, from time to time, called my attention to the fact of the former abundance, but present scarcity, of the nesting community. It would be interesting to know if the species has decreased in numbers in other localities [Capt. Hadfield says they have decreased in the Isle of Wight.—ED.], and if so, what is the probable cause. I am well aware the common House Sparrow has often been blamed for expelling the Martins, and not without reason. I cannot think, however, that the Sparrows are wholly to blame, but that some more subtle influence has been at work. None of the Swallow tribe are particularly robust in constitution, and, judging from the comparatively later arrival amongst us of the House Martin, it is somewhat more delicate than kindred species. Is it possible that our cold and often retarded springs, of late years, have killed the old birds, and that the early frosts of autumn have caused the destruction of the late broods? for it must have been noticed how soon the fledglings succumb to the cold, and that late broods of House Martins are more frequently found than other allied species. It is a generally received opinion, if not an ascertained fact, that "our summer migrants" do not breed in their winter retreats. If such is the case, and our changeable climate is a fair representation of the reception met with in their breeding quarters, it is scarcely to be wondered at that the more delicate birds decrease in numbers, or that the migration is more circumscribed in its northern limits. I may mention that during last summer there appeared to be no particular scarcity of Swallows or Swifts, and that Sand Martins were by far the commonest of the class, which is usually the case with us; but I noticed how unusually early in the year the species congregated in the early mornings preparatory to their journey southwards. — G. B. CORBIN (Ringwood, Hants).

Pied Variety of the Coot.—In March, 1888, Mr. Johnson shot on his mill-dam, near Southwell, Nottinghamshire, a variety of the Coot, about a year old, which was splashed all over with white, and looked as if it had been in a snow-storm, the markings being larger and more numerous on the back and tail-coverts. Varieties of this species are so very rare, that I was much interested with the bird. I only know of two others, one mentioned by Morris, and one in the Packington Collection, both of which are white.— J. WHITAKER (Rainworth, Notts).

Curious Variety of the Woodcock.—A very striking variety of the Woodcock has been forwarded from Carrick-on-Shannon, having the primaries pure white, a white collar round the throat, and white feathers dappled over the rest of the plumage, which is rather of a richer colour than the ordinary Woodcock. I may also mention having received a second bird marked somewhat similar, which was shot close to the city, and which the owner believes to have been the same bird he had fired at unsuccessfully in the same place the previous season.—EDWARD WILLIAMS (2, Dame Street, Dublin).

The Nutcracker in Lincolnshire. — A specimen of the Nutcracker, *Nucifraga caryocatactes*, was shot by Mr. Thomas Sargent, at Marsh Chapel, a parish on the Lincolnshire coast, on November 6th, 1888. This is, I believe, the first example of this bird known to have been found in Lincolnshire.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby).

FISHES.

Motella maculata as an Irish Fish.—A few years ago (about 1874) I obtained from a Dublin fishmonger a fine large specimen of the Three-bearded Rockling, This I presented to the Natural History Museum, and placed it there under the name of *Motella maculata* (Günther), as identified from Dr. Günther's excellent 'Catalogue of Fishes' (vol. iv. p. 366). My specimen was of a reddish salmon colour, or rich pinkish yellow, when fresh, with a number of black spots, and the fishmonger reported it as taken on the coast near Dublin. So difficult is it to ascertain the exact locality of any non-marketable, or small, insignificant fishes, when sold in the wholesale Dublin Fish-market, that I should like to draw attention to the Spotted Rockling, with a view of ascertaining whether it exists all round the Irish coast, or whether it be not rather a western and southern form, as seems likely.—A. G. More (74, Leinster Road, Dublin).

MOLLUSCA.

Limnæa involuta probably a Variety of L. peregra.—For many years in succession I collected specimens of *Limnæa involuta* (Harvey) in the little lake, called Lough Crincaum, above the Town Lodge, on Cromaglaun Mountain, near Killarney. The shells were always scarce; I never obtained more than from twelve to twenty specimens, which used to be found creeping along the tops of submerged stones, as if they were feeding upon the scanty Algæ which grew upon the surface of the stones. They were very fragile, and I used to turn them carefully into a soda-water bottle, full of water, into which I had put a good many bits of *Sphagnum* moss. In this way they travelled safely to Dublin, and I kept them, several times, alive for many months, once for two years,—they subsisting, as it seemed, on the minute organisms contained in pure water from the Vartry Reservoir, in Wicklow, and they required no other food. More than once eggs were laid on the side of the small glass vase in which I kept them, but I do not think that any young were hatched in my room in the Natural History Museum. I gave some to my friend the late Mr. E. Waller, of Aughnacloy, the well-known conchologist, and he told me that after two or three years, and when he had reared several generations in captivity, he found the involute spire disappearing in the younger progeny, and that he was satisfied that *Limnæa involuta* had thus become converted into *L. peregra* (Müller). The examples which Mr. Waller brought, and showed to me, fully bore out this view. Some had still the involute spire; others were simply thin and slight examples of *L. peregra*, in shape much like the shell figured by Forbes and Hanley (Plate cxxii., fig. 5). With so careful an observer and so skilled a conchologist as Mr. Waller, the only risk seemed to be that, in feeding his Killarney mollusks as he did on watercress, the *ova* of *L. peregra* might have been accidentally introduced. Still his shells of the successive broods were all of similar small size and of the same remarkable thinness, which are characteristic of *L. involuta* quite as much as the inserted spire. Some were provided with a very short spire; others like Forbes and Hanley's fig. 5, as above mentioned. I have before now recorded, in the 'Annals and Magazine of Natural History' (ser. 4, vol. iv., 1869, p. 46), with a figure (Pl. iii., fig. 3), that the animal of *L. involuta* does not differ from that of *L. peregra*, and that the former is not an *Amphipeplea* at all. Still I was desirous to carry out, or see carried out, a second series of experiments; but since the death of Mr. Waller I have not had any opportunity. I am myself inclined to believe that Mr. Waller's observations and his results were quite reliable, and I should agree with him that they do prove *L. involuta* to be only a variety or form of *L. peregra* (Müller), which we know is one of the most variable of our water shells. Isolated for a long period in a small mountain tarn, nearly a thousand feet above the lower Lake of Killarney, and finding only a scanty supply of lime and less food than in the lowland waters, *L. involuta* has probably altered its appearance, and has shrunk, as it were, into smaller dimensions, drawing in its spire at the same time, while its shell became thinner and thinner, till when first found it was held to present sufficiently distinct characters to be described as a new species.—A. G. MORE (74, Leinster Road, Dublin).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

February 21, 1889.—Mr. CARRUTHERS, F.R.S., President, in the chair.

Mr. G. A. Grierson was admitted a Fellow of the Society; and, on a ballot being taken, Messrs. Hindmarsh, Kirkby, Lowe, and Morton were elected Fellows.

Mr. George Murray exhibited a fossil Alga, *Nematophycus Logani*, Carr.

Mr. G. C. Druce exhibited some rare British plants from Scotland, amongst which were *Calamagrostis borealis*, *Ranunculus acris* var. *pumilus*, and *Bromus mollis* var. *decipiens*.

Prof. Marshall Ward exhibited a sclerotium of a Fungus produced from a Botrytis spore, and explained the method by which it had been obtained.

A paper was then read by Mr. F. Townsend, M.P., on *Euphrasia officinalis*, with a description of a new subspecies, and a discussion followed in which the President, Mr. J. G. Baker, and others took part.

In the absence of the author, a paper by Mr. C. T. Drury on sexual apospory in *Polystichum angulare* was read by the botanical Secretary, Mr. B. D. Jackson, upon which remarks were made by Mr. Murray and Dr. D. H. Scott.

Mr. Murray then gave the substance of a paper on a new genus of Green Algæ, proposed to be named *Boodlea*, and in so doing made some instructive observations on the affinities and distinguishing characters of allied genera. The paper was criticised by Messrs. A. W. Bennett, Reay Greene, and Dr. D. H. Scott.

In continuation of his researches upon the eyes of insects, Mr. B. T. Lowne gave an admirable exposition of the structure of the retina in the Blowfly, illustrated by preparations under the microscope, and some excellent photographs.

March 7, 1889.—Mr. CARRUTHERS, F.R.S., President, in the chair.

Messrs. Herbert Stone and Malcolm Laurie were admitted Fellows of the Society; and Messrs. John Bidgood and Christopher Mudd were elected.

Mr. J. E. Harting exhibited specimens of a South American Bat (*Noctilio leporinus*), alleged to be of piscivorous habits, and which, through the kindness of Sir William Robinson, K.C.M.G., the Governor of Trinidad, had been forwarded from that island by Prof. M'Carthy, together with a report on the subject. From this report it appeared that the stomach of one specimen, opened within half-an-hour after it had been shot, on the evening of Dec. 29th, "contained much fish in a finely divided and partially digested state." In three others procured at 6 a.m. the following morning, the stomachs were empty. On the morning of Dec. 31st, at 3 a.m., numbers of these Bats were observed returning to their caves; two were shot, and "both contained considerable quantities of fish." Prof. M'Carthy added that in the stomachs of other specimens examined by him fish-scales were undoubtedly present. Of the specimens forwarded in spirits to this country two had been skinned and the stomachs and intestines examined by Mr. Harting. The sac-like stomach was much less muscular than might be expected in a fish-eating mammal; but in one of them (the other being empty) fragments of a finely striated and iridescent substance resembling fish-scales were found. A discussion followed, in which Prof. Howes and Mr. W. P. Sladen took part, the conclusion being that, although there was no *à priori* improbability in the alleged piscivorous habits of this Bat, it could hardly be accepted as a fact until the fragments supposed to be of fish were really proved to be so by careful microscopical and chemical examination. [See report of next meeting, March 21st.]

A paper was then read by the Rev. Prof. Henslow, M.A., "On the Vascular Systems of Floral Organs, and their importance in the interpretation of the Morphology of Flowers." The author drew attention to the importance of this class of observations, as supplementing development and teratology; for by referring all organs back to their "axial traces," their real origins could generally be discovered. Taking the cords metaphorically as "floral units," he explained how they can, as it were, give rise to axes as well as to all kinds of floral appendages. Quoting Van Tieghem's definitions of axial and foliar characters, the former was shown to be subject to exceptions. After describing the arrangements of the cords in peduncles and pedicels, in which endogens often have the cords as regularly placed as in exogens, the author explained the different ways by which pedicels of umbels are found in each class respectively. The "chorism" and union of cords were illustrated and the effects produced. Considerable light was thrown upon the cohesion and adhesion of organs, and the interpretation of the "receptacular tube" and "inferior ovary" was shown to depend upon the undifferentiated state of the organs when in congenital union. The true nature of axile and free central placentas was revealed, so that in the case of the former, with scarcely any exception, the axis takes no part in the structure, all "carpophores," "stylopods," &c., being simply the coherent and hypertrophied margins of carpels. Similarly the free central placenta of *Primula* received its interpretation as consisting of the coherent and ovuliferous bases of fine carpels, which have the upper parts of their margins coherent in a parietal manner. Illustrative diagrams were exhibited of nearly seventy genera typical of about thirty orders. The paper was favourably criticised by Dr. D. H. Scott, Mr. A. W. Bennett, and Prof. Marshall Ward.

The meeting then adjourned to March 21st.

ZOOLOGICAL SOCIETY OF LONDON.

February 19, 1889.—Dr. ST. GEORGE MIVART, F.R.S., Vice-President, in the chair.

Mr. Sclater exhibited specimens of the eggs and chicks of the Hoatzin, *Opisthocomus cristatus*, from a series collected by Mr. R. Quelch in British Guiana, and called attention to the extraordinary development of the wings in the chick, in reference to the statement that these organs are used like hands for climbing purposes.

Mr. Sclater exhibited heads and skins of a new Antelope obtained by Mr. H. C. V. Hunter in Eastern Africa, which he proposed to call *Damalis hunteri*, after its discoverer.

Sir E. G. Loder, Bart., exhibited and made some remarks on a skeleton of the Rocky Mountain Goat, *Haplocerus montanus*.

Dr. Günther exhibited a mounted specimen of Thomson's Gazelle, *Gazella thomsoni*, and pointed out its complete distinctness from Grant's Gazelle, *G. granti*. The specimen in question had been obtained in Masailand by Mr. H. C. V. Hunter.

Mr. R. Lydekker read a paper on the skull of *Lytoloma*, an extinct genus of Chelonians allied to *Chelone*.

Mr. R. Lydekker pointed out the characters of an apparently new species of *Hyracodontotherium*, based on specimens from the phosphorites of Bach, near Lalbengue, in France.

Dr. A. Günther described some new fishes from the Kilima-njaro district in Eastern Africa, based on specimens obtained by Mr. F. J. Jackson during his recent expedition into that country. He also exhibited a dried specimen of a fish obtained by Mr. H. C. V. Hunter from one of the crater-lakes in the same district, which he referred to a new genus and species of *Chromidæ*, proposed to be called *Oreochromis hunteri*.

Dr. Günther also exhibited a pair of horns of an Antelope obtained many years ago in the interior of Southern Central Africa, which were remarkable for their length and gentle backward curvature, with only a very slight twist near the tips. He referred these horns to a new species proposed to be called *Antilope triangularis*.

Dr. Günther read some notes on a Bornean Porcupine, which he had formerly described as being without a tail, and named *Trichys lipura*. It now appeared that some specimens of this animal possessed a long and slender tail, but that other characters would necessitate the retention of the genus as distinct from *Atherura*.

Mr. F. E. Beddard read a paper directing attention to certain points in the anatomy of the Accipitres with reference to the affinities of *Polyboroides*. This form was shown to belong to the *Falconidæ*, and to have no real affinities with *Serpentarius*.

Sir Walter Buller read a paper on a species of Crested Penguin from the Auckland Islands, based on a specimen lately living in the Society's Gardens, which he proposed to call *Eudyptes sclateri*.

March 5, 1889.—Prof. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of February, and called attention to four Marbled Polecats, *Putorius sarmaticus*, presented by Col. Sir Oliver St. John, K.C.S.I., new to the collection; and to a fine specimen of Owen's Apteryx, *Apteryx oweni*, from the South Island of New Zealand, presented by Prof. T. Jeffrey Parker.

Mr. A. Thomson exhibited a series of insects reared in the Insect-house in the Society's Gardens during the past year, and read a report on the subject.

Prof. G. B. Howes exhibited and made remarks on some specimens of the embryo of *Myrmecobius fasciatus*.

Mr. O. Thomas exhibited a specimen of a new Muntjac from Tennasserim, lately discovered by M. Fea, and proposed to be called *Cervulus feæ*.

A communication was read from Mr. J. S. Baly, containing descriptions of some new South-American Coleoptera of the genus *Diabrotica*.

A communication was read from the Rev. H. S. Gorham, containing descriptions of some new species and a new genus of the coleopterous family *Telephoridæ* from Eastern Asia. Thirty-nine new species and one new genus (for which the name *Lycocerus* was proposed) were described. Of these new forms the greater part were from India and China.

Col. R. H. Beddome read a paper on new land-shells from the island of Koror (Pelew group), based on specimens collected for Dr. Hungerford by a resident in that island. The series comprised examples of eight new species of the genus *Diplommatina*, of two new and very curious species of *Endodonta* (a section of *Helix*), and of a remarkable new genus, allied to *Diplommatina*, proposed to be called *Hungerfordia*.

Mr. W. E. Hoyle read a paper on the anatomy of a rare cephalopod, *Gonatus fabricii*, originally discovered by Fabricius in the last century, but little known in recent times. The author gave a general description of the anatomy of the species, and recorded the existence of several tracts of cartilage hitherto unobserved in the Cephalopoda. Some details were given regarding the structure of the pen-sac and the development of the pen, as well as some new facts regarding the structure of the funnel-organ, and a suggestion regarding its function. The genus was regarded as being somewhat more nearly related to *Onychoteuthis* than to *Enoploteuthis*, but much further removed from them both than they are from each other. The creation of the subfamily *Gonatidæ* was then held to be justified.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

March 6, 1889.—The Rt. Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the chair.

The Rev. W. F. Johnson, M.A., of Armagh; the Rev. C. F. Thornewill, M.A., of Burton-on-Trent; and Mr. C. R. Straton, F.R.C.S., of Wilton, were elected Fellows.

Mr. F. P. Pascoe exhibited several specimens of the Saüba Ant (*Œcodoma cephalotes*), from Parà, carrying portions of dried leaves. It seemed questionable whether the leaves were collected by the Ants for the purpose of making their nests or for the sake of some fungus which might be growing on them.

Mr. Jenner-Weir exhibited, and read notes on, specimens of a Butterfly (*Tirumala petiverana*), from Mombaza, Eastern Africa.

Mr. J. H. Durrant exhibited a living larva of *Cossus ligniperda*, which had entirely lost its ordinary colour and had become first pink and then white. He attributed the change, and subsequent loss of colour, to the fact that it had been deprived of its natural food and fed for eighteen months on pink paper, with which the box in which it was kept was lined, and subsequently on white cardboard. Mr. M'Lachlan remarked that the most extraordinary peculiarity about this larva, in addition to the colour, was the absence of the usual odour of *Cossus*. Lord Walsingham observed that it was questionable whether the colours of larvæ were dependent on the colours of their surroundings, or whether they were affected by the contents of the intestinal canal. Prof. Meldola said that the caterpillar exhibited having eaten the pink paper had most probably become dyed by the colouring matter, and he did not think the observation had much bearing on the question of the protective colouring of caterpillars. It was well known to physiologists that certain dye-stuffs could be introduced into the tissues of animals by mixing the colouring matters with the food, and paper was frequently stained with coal-tar dyes such as eosin, magenta, &c., so that it was simply a case of direct dyeing of the larva. Mr. W. White observed that two extreme forms of a larva might often be found feeding side by side on the same tree or shrub, so that the colour of a larva could not be altogether governed by the colour of its food.

Mr. B. A. Bower exhibited a specimen of *Parasia neuropterella*, bred from heads of *Centaurea scabiosa*, and said he believed the species had not been previously bred. He also exhibited series of *Coleophora olivaceella*, *C. solitariella*, and *Laverna subbistrigella*. The President remarked on the beautiful condition and setting of the specimens.

Mr. White exhibited a series of male and female specimens of *Orgyia thyalina*, belonging to Mr. Leech, and obtained by the late Mr. H. J. Pryer in Japan. Some of the females had their wings fully developed, and some of them were semi-apterous, as is usual with the females of this genus. Mr. White remarked that he knew of no other species of the genus in which the females had fully-developed wings. Lord Walsingham, Prof. Meldola, and Mr. R. South took part in the discussion which ensued.

Lord Walsingham exhibited specimens of preserved larvæ of *Eupithecia extensaria*, from King's Lynn, Norfolk; also a preserved larva of *Smerinthus ocellatus* and one of *Sphinx ligustri*. The larva of the last-named species was a variety, and the President remarked that it was the only one of this species he had ever seen.

The Secretary read a communication from the Rev. Dr. Walker, announcing his intention of making an expedition to Iceland this year, from the 23rd June to the 29th July, and asking that any entomologists who might wish to accompany him would send him their names.

Mr. Gervase F. Mathew communicated a paper entitled "Descriptions and Life-Histories of new species of Rhopalocera from the Western Pacific."—H. Goss, *Hon. Secretary*.

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